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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BIBBINS, LATANYA

ART UNIT

PAPER NUMBER

2627

NOTIFICATION DATE

DELIVERY MODE

01/25/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary	Application No. 10/572,941	Applicant(s) KURODA, KAZUO	
	Examiner LaTanya Bibbins	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In the remarks filed on November 3, 2009, Applicant amended claims 12, 15 and 20, cancelled claim 13, and submitted arguments for allowability of pending claims 12 and 14-20.

Response to Arguments

2. Applicant's arguments, with respect to claims 12 and 14-20, that the combination of Horimai and Ishii fail to disclose that the optical path of the reference light and the tabular shaped laser beam are located side-by-side along the recording surface, as viewed from the recording surface have been considered but are moot in view of the new grounds of rejection.

Specification

3. The disclosure is objected to because of the following informalities: the specification does not include a brief description of the drawings and as such is inconsistent with the preferred/suggested guidelines for the layout of the specification. Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

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- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A “Sequence Listing” is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required “Sequence Listing” is not submitted as an electronic document on compact disc).

Claim Objections

4. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.

More specifically, claim 15 recites “wherein said splitting optical system splits the reference light such that the optical path of the reference light and the tabular shaped laser beam are located side-by-side as viewed from the recording surface.” These limitations are previously recited in newly amended claim 12 and thus fail to further limit the subject matter.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 12 and 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 12, 15 and 20 recite "a tabular shaped laser beam." Claim 20 also recites "a flat surface" of the tabular shaped laser beam. By definition tabular refers to having a plane or flat surface. While it is possible that a cross-section of a laser beam can be tabular it is unclear what is meant by a tabular shaped laser beam (i.e. a laser beam having a flat surface). In the interest of compact prosecution, a tabular shaped laser beam will simply be interpreted as a laser beam.

Dependent claims 14 and 16-19 do not resolve the 35 U.S.C. 112 second paragraph issues of independent claim 12 recited above and are therefore rejected as incorporating the deficiencies of a claim upon which they depend.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12, 14-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (US Patent Number 7,002,891 B2) in view of Ishii et al. (US Patent Number 4,012,108) and further in view of Naito et al. (US Patent Number 4,751,694).

Regarding claim 12, Horimai discloses an information recording apparatus for recording record information onto a recording medium having an optically recordable recording surface (Figure 1), comprising: a laser light source (Figure 1 element 12); a one-dimensional spatial modulating device for performing one-dimensional spatial modulation in the direction extending linearly with respect to the laser beam, on the basis of the record information (Figure 1 elements 17 and 25 and the discussion column 13 line 9 and column 17 lines 17-23); a recording optical system for recording the record information onto the recording medium, by irradiating the recording surface with reference light based on the laser beam emitted from said laser light source while irradiating the recording surface with the spatial modulated laser beam as signal light (see the pick-up of Figure 1 element 11); and a displacing device for displacing the recording medium relative to said recording optical system such that irradiation positions of the signal light and the reference light are relatively displaced on the recording surface (Figure 2 elements 82 and 83), said recording optical system including: a splitting optical system for splitting the laser beam emitted from said laser light source into the signal light and the reference light in a previous step of said converting optical system (Figure 1 element 16); and a combining optical system for combining the one-dimensional spatial modulated signal light and the reference light to a same optical

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path, in a subsequent step of said one-dimensional spatial modulating device (element 20 of Figures 1 and 10).

Horimai, however, fails to specifically disclose while Ishii discloses a converting optical system for converting a laser beam emitted from said laser light source to a tabular laser beam whose cross section extends linearly and for emitting the laser beam such that a direction extending linearly is along the recording surface (see Figure 1 elements 36 and 39 and the discussion in column 5 lines 13-18 regarding the cylindrical concave lens and the spherical lens).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cylindrical and spherical lenses of Ishii into the information recording apparatus of Horimai. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to decrease the diameter of the laser beam entering the one dimensional spatial light modulator such that manufacture of the spatial light modulator is simplified (as suggested by Ishii in column 5 lines 19-26).

The combination of Horimai and Ishii further disclose wherein said splitting optical system splits the reference light such that the optical path of the reference light and the tabular laser beam are located side-by-side (see Figure 1 of Horimai and the optical paths of the reference light and the information light). The combination of Horimai and Ishii, however fail to disclose that the optical path of the reference light and the tabular laser beam are located parallel to the recording surface as viewed from the recording surface.

Naito, however, clearly suggests an information recording apparatus having the optical path of the laser beam located parallel to the recording surface as viewed from the recording surface (see the discussion in column 1 lines 38-54 and 62-66).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Naito and have the optical path of the reference light and the tabular shaped laser beam parallel to the recording surface as viewed from the recording surface into the information recording apparatus of Horimai and Ishii. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to minimize the height or thickness of the information recording apparatus as suggested by Naito in column 1 lines 38-54 and 62-66.

Regarding claim 14, the combination of Horimai, Ishii and Naito further disclose wherein said recording optical system further comprises a splitting optical system for splitting the laser beam emitted from said laser light source into the signal light and the reference light in a previous step of said converting optical system (see Horimai Figure 1 element 16), and the one-dimensional spatial modulated signal light and the reference light are combined to a same optical path and irradiated to the recording surface (see Figure 1 of Horimai and the optical paths of the reference light and the information light which are combined by element 20).

Regarding claim 15, the combination of Horimai, Ishii and Naito further disclose wherein said splitting optical system splits the reference light such that the optical path

of the reference light and the tabular shaped laser beam are located side-by-side as viewed from the recording surface (see Horimai Figure 1 element 16).

Regarding claim 16, the combination of Horimai, Ishii and Naito further disclose wherein the reference light is emitted from said laser light source together with the signal light (see Horimai Figure 1 element 12), and irradiated to the recording surface through said converting optical system (again note the discussion of Ishii in column 5 lines 13-18 regarding the cylindrical concave lens and the spherical lens), said one-dimensional spatial modulating device (Horimai Figure 1 elements 17 and 25), and said recording optical system (Horimai Figure 1 element 11).

Regarding claim 17, the combination of Horimai, Ishii and Naito further disclose wherein an axis in a longitudinal direction of said one-dimensional spatial modulating device is crossed with radial direction of the disc-shaped recording medium (see the SLM disclosed by Horimai, Figure 1 elements 17 and 25).

Regarding claim 18, the combination of Horimai, Ishii and Naito further disclose wherein said combining optical system combines the signal light and the reference light to a same optical path (see Figure 1 of Horimai), by multiplexing the signal light and the reference light (see the discussion in Horimai column 19 lines 51-57).

Regarding claim 20, the combination of Horimai, Ishii and Naito further disclose wherein said converting optical system emits the laser beam such that a flat surface of the tabular laser beam is parallel to the recording surface (see Ishii Figure 1 elements 36 and 39 in relation to the recording surface).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (US Patent Number 7,002,891 B2) in view of Ishii et al. (US Patent Number 4,012,108) and Naito et al. (US Patent Number 4,751,694), as applied to claim 12 above, and further in view of Psaltis et al. (US Patent Number 5,978,112).

Regarding claim 19, the combination of Horimai, Ishii and Naito disclose the information recording apparatus according to claim 12 but fail to specifically disclose while Psaltis discloses wherein said recording optical system records the record information onto the recording medium such that an axial direction of a Fourier image is shifted from a radial direction of the disc-shaped recording medium (see the discussion regarding shift multiplexing in column 1 line 42 – column 2 line 4, Figures 7, 17 and 18 and the corresponding discussion in column 6 lines 35-59 and column 12 line 64 – column 13 line 44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Psaltis into that of Horimai, Ishii and Naito and include the shift multiplexing technique. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to superimpose multiplex holograms without significant crosstalk (as suggested by Psaltis in column 2 line 1).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571)270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LaTanya Bibbins/
Examiner, Art Unit 2627

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627